V. *Some Remarks on the* Variations *of the* Magnetical Compaſs *publiſhed in the* Memoirs *of the* Royal Academy of Sciences, *with regard to the General Chart of thoſe* Variations *made by* E. Halley; *as alſo concerning the true* Longitude *of the* Magellan Streights.

IT muſt be acknowledged that the Gentlemen of the *Royal Academy of Sciences* in *France*, have, for ſome Years paſt, apply'd themſelves with much Candour, as well as Diligence, to examine the Chart I publiſh'd in the Year 1701, for ſhewing at one View the Variations of the Magnetical Compaſs, in all thoſe Seas with which the *Engliſh* Navigators are acquainted: And, to my no ſmall Satisfaction, I find that what I did ſo long ago, has been ſince abundantly verified by the concurrent Reports of the *French* Pilots, who of late have had frequent Opportunities of enquiring into the Truth thereof. So that I am in hopes I have laid a ſure Foundation for the future Diſcovery of an Invention, that will be of wonderful Uſe to Mankind when perfected; I mean that of the Law or Rule by which the ſaid Variations change, in Appearance regularly, all the World over. Of this I have adventured long ſince to give my Thoughts in N° 148 and N° 195 of theſe *Tranſactions*, and as yet I ſee no Cauſe to retract what I there offer for a Reaſon of this Change; but of this we might be more certain, had we a good Collection of Obſervations made in that Ocean which divides *Aſia* and *America*, and occupies about two fifths of the whole Circumference of the Globe. This, we hope, from the natural Curioſity of the *French* (who want no Means of performing it) may be effectually ſupply'd by ſuch of that Nation who may return from *Peru* by the *Eaſt-Indies*.

In the mean time I cannot omit to take Notice of two Particulars, ſeeming to call in Queſtion the Truth of my aforeſaid Map, which I have lately obſerved in the *Memoirs* of the *Royal Academy of Sciences.*

The one is in the *Memoirs* of the Year 1700, concerning the Variation obſerved at *Paraïba* in *Braſile*, about 25 Leagues to the Northwards of *Pernambouc*, by M. *Couplet l'fils*, whoſe Words are theſe,

Le 20 Mai, 1698. *ayant auparavant tracé ſeigneuſement une ligne Meridienne, dont je m'etois ſervi pour les Obſervations Aſtronomiques, jobſervai la declinaicon de l'aiguille aimantée de 5° 35′* Nordoueſt. And the ſame Obſerver tells us, that he found the Latitude of the Town of *Paraïba* 6° 38′ 18″. Now it ſo fell out, that my ſelf was in the River of *Paraïba*, in the Month of *March*, 1699. and there fitted and cleaned my Ship, ſo that I had full Opportunity to obſerve the Variation both on Board and on Shore, and found it conſtantly to be above 4 Gr. *North-Eaſt*; ſo that I am willing to believe this to be an Error of the Preſs, putting N. W. for N. E; or rather of the Memory of M. *Couplet*, who, it ſeems, loſt all his Papers by Shipwreck in his Return. The like may be ſaid of the Latitude of *Paraïba*, which, though I did not obſerve my ſelf, yet at the Fort of *Cabo Dello*, at the Mouth of the River, and which is about 3 Leagues more Northerly than the Town, I found the Latitude not leſs than 6° 55′ South, and by Conſequence that of the Town more than 7 Degrees.

The other is in a Diſcourſe of M. *de Liſle*, in the *Memoirs* of 1710; where he compares the Variations obſerved in ſome late Voyages, with my Map of the Variations. Among other Things, 'tis there ſaid, that on the Eaſt-ſide of the Iſland St. *Thomas*, under the Equinoctial Line, M. *Bigot de la Canté*, ſecond Lieutenant of the King's Ship *la Sphere*, had, in the beginning of the Year 1708, found the Variation 11½ Gr. whereas my Chart makes it but 5½ Gr. 'Tis true, that I never obſerved my ſelf in thoſe Parts; and 'tis

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from the Accounts of others, and the Analogy of the whole, that in ſuch Caſes I was forc'd to ſupply what was wanting; and 'tis poſſible that there may be more Variation on that Coaſt than I have allowed. But conſulting my Chart (which was fitted to the Year 1700) I find I then make the Variation at the Iſle of St. *Thomas* full $7\frac{1}{2}$ Gr. and not $5\frac{1}{2}$ Gr. the which, by the Year 1708, might well ariſe to near 9 Gr. So that the Difference will become very tolerable; whereas an Error of 6 Degrees, ſuch as is here repreſented, would render the Credit of my Chart juſtly ſuſpected, and the ſame by conſequence wholly uſeleſs, as not to be confided in.

But a further Thing I might complain of is, that in the ſame *Memoire* of M. *de Liſle*, the Geography of my Chart is called in Queſtion; and we are told that I have placed the Entrance of the *Magellan* Straights at leaſt 10 Degrees more Weſterly than I ought to have done: for that the Ship St. *Louis*, in the Year 1708, ſailing from the Mouth of *Rio Gallega*, in about the Latitude of 52 Gr. South, and not far from Cape *Virgin*, directly for Cape *Bonne Eſperance* (which Courſe perhaps was never run before) had found the Diſtance between the two Lands not more than 1350 Leagues, which, he concludes, is much leſs than my Chart of the Variation makes it. I know not from what Computation M. *de Liſle* has deduced this Conſequence, but I find by my Chart that I have made the Longitude of *Rio Gallega* 75 Gr. Weſt from London, and that of Cape *Bonne Eſperance* $16\frac{1}{2}$ Eaſt from it; that is in all $91\frac{1}{2}$ Gr. difference of Longitude. This, with the two Latitudes, gives the Diſtance, according to the Rhumb-line 1364 Leagues, but according to the Arch of a great Circle, no more than 1287 Leagues; ſo that inſtead of invalidating what I have there laid down, it does abſolutely confirm it, as far as the Authority of one ſingle Ship's Journals can do it.

I do not pretend that I have had Obſervations made with all the Preciſion requiſite, to lay down inconteſtably the *Magellan* Straights in their true Geographical Site; but yet it has not been without good Grounds that I have placed them as I have done. For when Sir *John Narborough*, in the Year 1670, wintered in Port St. *Julian*, on the Coaſt of *Patagonia*, Capt. *John Wood*, then his Lieutenant, and an approved Artiſt in Sea Affairs, did obſerve the beginning of an Eclipſe of the Moon, *Sept.* 18vo *Stil. vet.* at juſt 8 at Night: And the ſame beginning was obſerv'd by M. *Hevelius* at *Dantzick* at 14^h 22′; whence Port St. *Julian* is more Weſterly than *Dantzick* 6^h 22′, or than *London* 5^h 6, that is $76\frac{1}{2}$ Gr. Beſides, I have had in my Cuſtody a very curious Journal of one Capt. *Strong*, who went into the *South Seas* in queſt of a rich Plate-wreck, and who diſcover'd the two Iſlands he called *Falkland's Iſles*, lying about 120 Leagues to the Eaſtwards of the *Patagon* Coaſt, about the Lat. of $51\frac{1}{2}$. This Capt. *Strong* had a quick Paſſage from the Iſland of *Trinadada* (in $20\frac{1}{2}$ South) to the *Magellan* Straights; and in this Journal, which was very well kept, I found that Cape *Virgin* was, by his Account, 45 Degrees of Longitude more Weſterly than that Iſland, whoſe Longitude I know to be juſt 30 Degrees from *London*: that is in all 75 Gr.

From theſe concurrent Teſtimonies, wanting better, I adventured to fix the Longitude of this Coaſt as I have done; and I can by no means grant an Error of 10 Degrees to be poſſible in it, though perhaps it may need ſome ſmaller Correction. I will however readily grant, that thoſe that go thither from *Europe*, ſhall find the Land more Eaſterly than is here expreſs'd, by reaſon of a conſtant Current ſetting to the Weſtward near the Equator, where Ships are many times long detained by Calms, whilſt the Stream carries them along with it; which thing befalls all Ships bound to any Part of the Eaſt Coaſt of the *South America*.

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